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Heavy rains first big test of Calif. flood control dam

By Greg Fuderer
Los Angeles District

Five years after coming on line, Seven Oaks Dam finally had the opportunity to function the way its designers intended.

As with many dams in Southern California's arid climate, the basin behind Seven Oaks Dam lies dry much of the year. But early this year, heavy rains fell throughout Southern California. The reservoir at Seven Oaks Dam rose, climbing steadily, submerging the intake tower, until it reached a record depth of more than 290 feet.

"The inflows into Seven Oaks presented us with the first time that Seven Oaks mattered as a flood control structure," said Joe Evelyn, Chief of the Hydraulics and Hydrology Branch at the Corps' Los Angeles District. "This was the first time that the dam really had an impact on flows downstream."

Lying at the foot of Southern California's majestic San Bernardino Mountains, Seven Oaks Dam sits between two branches of the San Andreas Fault. Completed in 1999 at a cost of $500 million, the dam is a major structure of the Santa Ana River Mainstem Project that wends its way through San Bernardino, Riverside, and Orange counties. It plugs a gap where floodwaters once flowed, creating death and destruction on their way to the Pacific Ocean at Newport Beach nearly 75 miles downstream.

Those steep mountain slopes provide the backdrop for the Santa Ana River, whose drop in elevation is steeper that of the nearly 2,500-mile-long Mississippi River. These factors combine to make the Santa Ana River an infrequent but formidable force to confront. They also mean that Seven Oaks will retain a deep pool of water.

Prado Dam was a prime recipient of Seven Oaks Dam's impact on flows downstream. Prado is nearly two years into an eight-year, $430 million modification. The improvements to the dam will increase the volume of its retention basin, and more than triple its discharge capacity. As Prado experienced its own record inflows, residents around the dam benefited from the nearly 43,000 acre-feet of water that Seven Oaks held back. (An acre-foot of water covers one acre to a depth of one foot. It is roughly equivalent to a football field under one foot of water.)

Although the rain caused some damage and closed some roads, the advantages from Seven Oaks were clear.

"During the storms, we retained flood water at Seven Oaks and reduced the flow rates downstream," said Lance Natsuhara, Section Manager for the Santa Ana River Project in Orange County. "The

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This year is the first time that Seven Oaks Dam has held a full reservoir since its completion in 1999. The dam is a major structure in the Santa Ana River Mainstem Project. (Photo courtesy of Los Angeles District)

10 Years Ago

OK City bombing tested Corps, nation

Mary Beth Hudson
Tulsa District

Ten years ago, on April 19, 1995, a yellow Ryder rental truck parked in front of the Alfred P. Murrah Federal Building in Oklahoma City, Okla. The truck was a rolling bomb, packed with 3,000 pounds of ANFO -- homemade ammonium nitrate/fuel oil explosive.

At 9:02 a.m., the quiet Wednesday morning was shattered by a blast felt and heard miles away. The massive explosion sheared off the entire north side of the building and pancaked all nine floors.

Its repercussions continue to be felt a decade later.

The bomb killed 149 adults and 19 children, injured 850 people, and damaged buildings for blocks around. It left the downtown area looking like a war zone. It was, at the time, the deadliest terrorist attack on U.S. soil, and it continues as the deadliest committed by an American citizen. The perpetrator, Timothy McVeigh, was executed. An accomplice, Terry Nichols, is serving multiple life sentences without parole.

Corps response

Response was immediate. Thousands of volunteers and rescue workers did everything they could to help. About 43 employees from the U.S. Army Corps of Engineers deployed to search for survivors, evaluate the condition of ruined buildings, and keep rescue teams safe. More than half were from Tulsa District, and others traveled from throughout the Corps.

As search and rescue became search and recovery, Corps specialists focused on the safety of workers in the unstable building. They shored up support columns, observed structural conditions, and set priorities in debris removal. The structural specialists accompa-

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Insights

Springtime is a season of renewal for all things

Article by Col. Mark Fentress
Chaplain, U.S. Army Corps of Engineers
Artwork by Jan Fitzgerald
HECSA

"Mark, the flowers are coming up!" That's the excited and inspiring announcement my wife, Becky, shared with me last week. And sure enough, when I checked the front yard where we had planted the flower bulbs last autumn, there they were — coming up out of the ground in all their glory!

Every year about this time my winter-weary soul gets a lift from these flowering miracles. Indeed, the flowers of springtime are a symbol of faith to me, a reminder that God always keeps His promises in this beautiful and sometimes broken world. And that's something worth remembering!

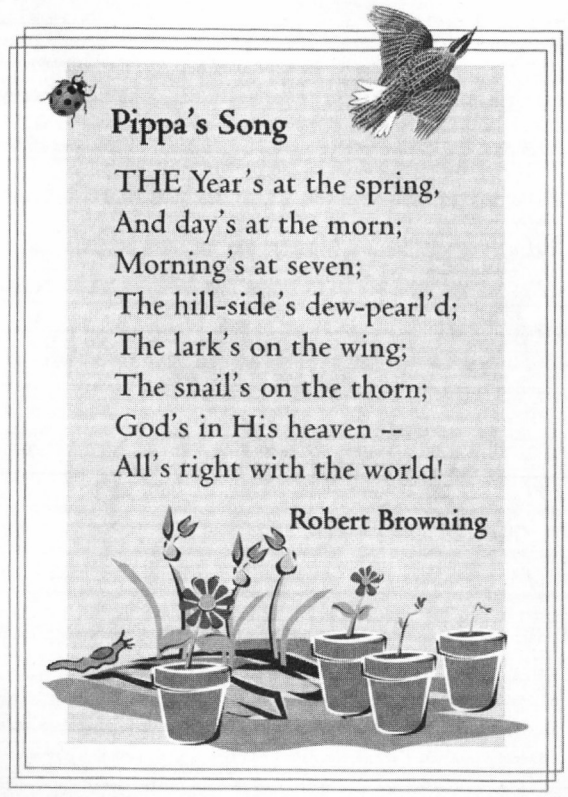
Robert Browning, the noted poet, also had a victorious faith in God that was best evidenced by the two last lines of his famous poem. Some might say such words reveal that he was a naive man at best, and one who had a callous disregard for human suffering. Didn't he see the gross sickness, poverty, hunger, and other human ills that plague so much of mankind?

Sure he did, but he didn't let it blind him to the awesome beauty of God's creation and the up-beat experience of focusing on the countless positive blessings of life. Hopefully we, too, can discover such a vibrant faith!

In closing, we all go through periods of good times, bad times, and even the humdrums of in-betweens. That's life. However, we should never forget that, like the flower bulbs planted in autumn, we don't await spring in vain. For all of us who hold on and persevere in faith, God always brings renewal, rebirth, and resurrection. It is as certain as the flowers that return miraculously each spring!

Prayer — Lord God, open our eyes to the countless miracles that surround us. Fortify our faith and inspire us to stay on the battlefield of life in overcoming human misery wherever we find it. We also ask Your continued protection and watch-care to be upon our comrades serving downrange and their families. — ***Amen.***

May God infuse all of your days with the vibrancy of an unbeatable, resolute, joyous, and confident faith!



In faith and friendship,
Chaplain Mark

(The opinions expressed in this article are those of the writer and do not reflect the official policy or position of the U.S. Army Corps of Engineers, the Department of the Army, the Department of Defense, or the U.S. government.)

Senior leaders meet, exchange ideas through National Management Board

By Bernard Tate
Headquarters

"It may seem surprising, but even most senior-level division folks aren't able to get together across regions very often," said Paul Seguin, strategic planner with the Directorate of Strategy & Integration. "When we have the Senior Leaders Conference or other special event, that's when they see each other. So often there's more contact between Headquarters in Washington, D.C., and division senior leaders than there is laterally."

The National Management Board (NMB) is one effort to improve communications among the Regional Business Centers (RBC), as well as between Headquarters and the RBCs overall. It is a national forum for Senior Executive Service (SES) leaders in the U.S. Army Corps of Engineers to share regional best business practices, recommend strategic initiatives, and provide input to ensure consistent implementation of those strategies across USACE.

"The NMB is action-oriented with a goal of making timely, implementable decisions, and recommendations on the issues it addresses," said Seguin.

The NMB met for the first time March 8-9 at Corps Headquarters in Washington, D.C. The members of the NMB are:

- Director of Strategy & Integration (co-chair of NMB, currently Kristine Allaman).
- The eight Regional Business Directors (one is the other NMB co-chair, currently Dan Hitchings from Mississippi Valley Division).
- Deputy Director of Civil Works.
- Deputy Director Military Programs.
- Director of Research & Development.
- Director of Resource Management.

It's the civilian leaders debating & deciding the best ways to do things.

Some might think that the NMB was created to be yet another level of management, but "it's not a group that has command authority," said Seguin. "It's the civilian leaders debating and deciding important questions, and the best ways of doing things in the Corps."

The NMB works in concert with the USACE Command Council, which is made up of division and center commanders, program directors, all of the Headquarters general officers, selected SES members. The Chief of Engineers chairs the council. NMB will offer recommendations to the council, and the council will also ask the NMB to investigate a good idea for broad consideration.

The NMB got off to a good start in their first meeting.

"There was an interesting observation made," said Seguin. "Each division representative spoke about how they have implemented the original RBC concepts since starting in 1998. Some call equivalent organizations the Command Council, or the Board of Trustees; others blend those bodies with the Regional Management Board. So one of the Regional Business Directors said that with all the RBCs clearly trying to achieve the same outcome, it's interesting to see the differences and variations they're using to get there. We really didn't know *how* differently we're doing some of these things. One of the NMB's jobs is to look at those different approaches, and evaluate which would be best to use across the Corps.

"During their first meeting, four of the regional business directors each presented sample best practices and experimental efforts they are pursuing to learn whether there may be broad application for the Corps," Seguin added. "On some of those we'll go further and see how they could be applied elsewhere across the Corps, and what the business case would be for adopting them more widely."

"It is this aspect that helps drive us toward being a learning organization, finding what works and transferring the knowledge across boundaries," said Allaman.

The NMB will meet every other month, alternating between Washington, D.C., and one of the Regional Business Centers. The next meeting will be in May in Great Lakes & Ohio River Division.

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Commander, USACE.....Lt. Gen. Carl A. Strock
Chief, Public Affairs.....Carol A. Sanders, APR
Chief, Command Information.....George E. Halford
Editor.....Bernard W. Tate

California rains

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major source of significant flows along the river was runoff from the watershed downstream from the dam. Without the dam, the peak flows would have been significantly higher."

Lots of water

Capitalizing on the silver lining from January's overflowing clouds, the Corps assembled a team of engineers and technicians, installed instruments, and prepared to perform operational tests of Seven Oaks Dam. They would release water under controlled conditions, technically called Seven Oaks Hydraulics Instrumentation Test Plan, to collect data on how the outlet works operate.

"Mother Nature provided us with a golden opportunity to conduct the releases in a safe and controlled manner," Evelyn said. "We had design engineers and operations experts on hand to manage and monitor the releases under pre-determined conditions. We had a schedule in place to discharge set rates of water for specified times. The tests would then compare the outlet structures' performance to their design parameters."

"The tests were an opportunity for us to collect data on the dam's outlets, and to verify its design," said Dave Cozakos, a senior hydraulics engineer at Corps. "It's something we'd been planning to do for years, but we'd never had enough water in the reservoir to conduct the study."

"Seven Oaks is a high head dam, meaning it's designed to operate under the high pressures associated with a deep reservoir," Evelyn said. "Its outlet gates are designed to be able to operate under that high pressure. Fortunately, we didn't have to make our initial flood control releases during a major flood in the middle of the night. We knew how much water we had. This was a great chance for us to run the operational tests."

Before the testing began, Cozakos said the releases from Seven Oaks Dam would have minimal impacts downstream. "Riverside County will see lower flow rates from the water we release due to the brevity of each test release and its distance downstream," he said. "Because of the nature of the streambed, we can assure everyone that the flows will be confined within the channel banks."

After the tests, engineers would revert to normal flood-control operation of Seven Oaks Dam. They anticipated that lowering the remaining pool of water behind Seven Oaks would take six to eight weeks.

"This was like Christmas for the engineers," said Robert Kwan, referring to the anticipation those technical experts felt in advance of high-pressure release tests. Kwan is the project engineer at Los Angeles District who oversaw design and construction of the dam.

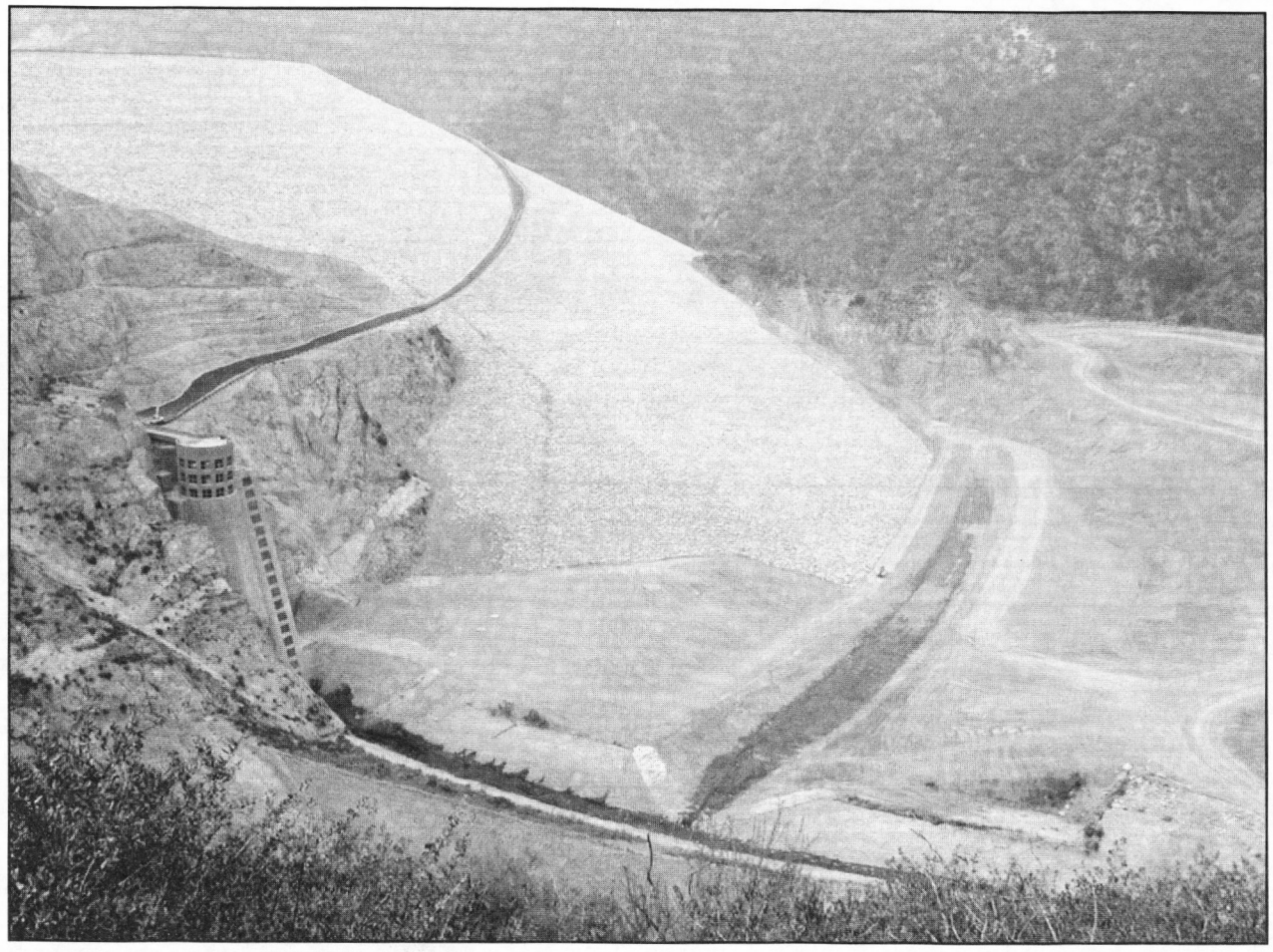
Questions

As the date for the tests approached, several concerns arose.

Engineers needed to limit the amount and the duration of the releases at Seven Oaks because of ongoing construction at Prado Dam some 35 miles downstream. Prado already retained a significant amount of water. Excessive inflow to Prado risked overtopping the cofferdam (a temporary retaining structure designed to keep a work area dry) that protected construction at Prado's intake and outlet works. Heavy rains in January had done just that, dumping water, muck, and other debris into the construction pit, halting work and adding months to the project schedule.

Flood control districts, emergency response organizations, and water conservation agencies were among those expressing a desire for more coordination for the test releases. Among the questions raised:

- How would the releases affect low-lying roads that cross the river's path?



This is how the Seven Oaks Dam usually looks in the arid Southern California climate. The round control structure at lower left was completely underwater after the recent heavy rains. (Photo courtesy of Los Angeles District)

- What efforts would ensure that the homeless, off-roaders, sightseers, and others who live or enjoy recreation in the area would not be washed out to sea under a wall of water gushing down the riverbed?
- Why would the agencies involved "waste" millions of dollars' worth of scarce, valuable water stored behind the dam merely to conduct a test?
- Conversely, why would the agencies retain unusable, silty water behind the dam when it could be drained quickly and replaced with the clean flow from snow-melt in the mountains, water that would be more suitable for the water resource agencies' needs.

All good questions. No easy answers.

Countdown

At several coordination meetings, the agencies addressed the specifics of the tests and the safety measures to be put into place. By mid-March, the tests were ready to proceed.

"The tests incorporated a series of short-duration releases that covered the designed operating range of the dam," said Joe Evelyn, chief of Hydrology and Hydraulics Branch. "Ideally, they would verify that our operating procedures are optimal. Since this was the first time significant flood control releases would be made from the dam, we felt we'd likely find that we could adjust the procedures developed during the design of the dam, and improve overall project operation. We also felt the data would be useful in contributing to current engineering guidance for the design, construction, and operation of outlets at other deep reservoirs."

The tests would allow the agencies to collect data on how the outlet operates with a significant reservoir level. Engineers could also determine the best combination of gate openings to use when making releases at various reservoir levels.

Officials from both the Corps and local agencies emphasized that the test releases would not pose any safety threat to residents or businesses.

Results

For the most part, the outlet works testing was successful, and considerable valuable data was collected. All of the low-flow testing was completed, but

Dave Cozakos, a senior hydraulics engineer with Los Angeles District, explains the tests at Seven Oaks Dam and what he hopes to learn from them to the news media. (Photo courtesy of Los Angeles District)

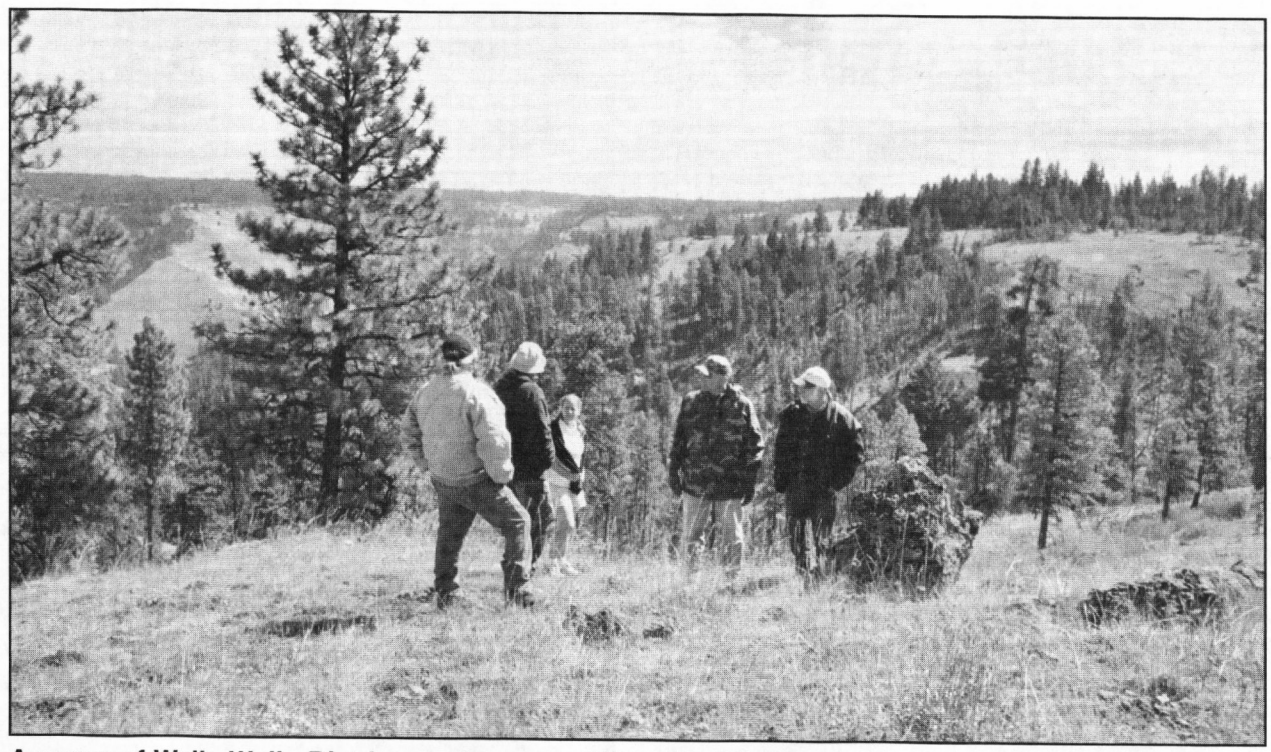
the high flow testing had to be cut short. While operating one of the two main regulating gates, an unusual noise and vibration was encountered with the gate about three-quarters open. The gate was closed, and inspection of the tunnel revealed that a 30-by-30-foot section of the concrete floor a short distance downstream of the gate was damaged.

The damaged section is in the area where the concrete floor had been resurfaced during dam construction due to damage from diversions of flows. Hydraulic data collected before the damage, plus additional data that will be collected from coring samples of concrete throughout the tunnel floor, will help engineers determine the cause of the damage and design proper repairs.

In the meantime, to prevent further damage, the reservoir is being drained at only about 700 cubic feet per second using a combination of a steel pipe that runs underneath the tunnel and the low flow regulating gate, which restricts the flow sufficiently to prevent further damage. The reservoir is expected to be nearly empty in early May, and repairs are expected to be completed before the next flood season in November.

"We generally expect to see some shakedown issues with a project of this magnitude," Evelyn said.

Environmental Operating Principles celebrate four years



A group of Walla Walla District employees and Umatilla tribal members look out over the landscape during a Native American Training class. (Photo by Nola Conway, Walla Walla District)

By Candice Walters
Headquarters

April marks the fourth anniversary of what some consider a revolutionary step for the U.S. Army Corps of Engineers – the adoption of the USACE Environmental Operating Principles.

Four years ago, Lt. Gen. Robert Flowers, then Chief of Engineers, issued a draft set of environmental principles. One year later, he unveiled the final seven Environmental Operating Principles (EOP) at Davis Pond in Louisiana. At the time, some considered the principles revolutionary because of new terminology such as sustainability. However, the core of the EOP reflects what the U.S. Army Corps of Engineers has always sought – to be good environmental stewards and protect the environment and water resources for future generations.

"These principles are meant to embed an environmental ethic into us so it's second nature to automatically and intuitively consider environmental concerns as we make decisions," said Lt. Gen. Carl Strock, present Chief of Engineers. "I consider them a report card. When I speak to groups that have an environmental interest, I ask them to read the principles and to let me know if and why they think we're not adhering to the principles."

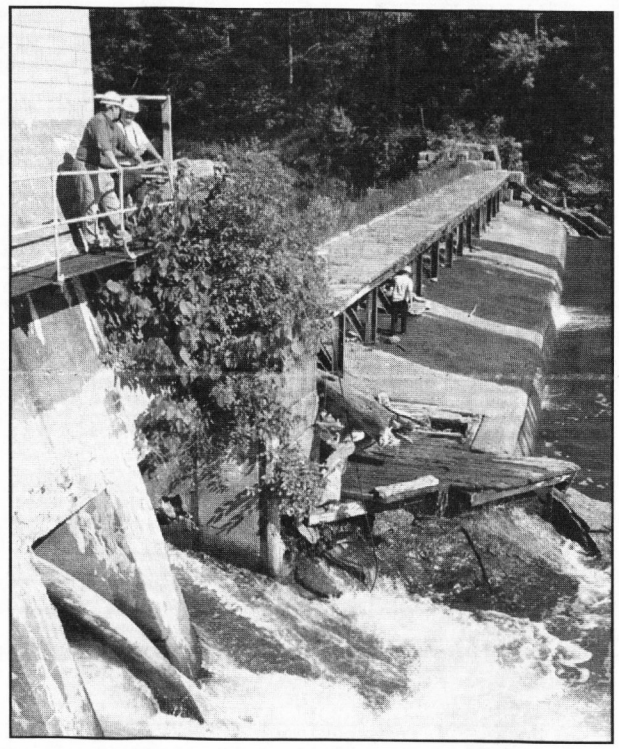
Throughout the Corps, employees are taking that ethic to heart. Below are just four examples of how the principles are being applied to projects that will impact our nation and the armed forces.

Maine dam removal

Migratory fish, such as shad, rainbow smelt, striped bass, and Atlantic salmon, among others, are finding their passage to new spawning and foraging areas much easier these days thanks to New England District's removal of the former Smelt Hill Dam near Presumpscot Falls in Falmouth, Maine.

With the Maine Department of Marine Resources as the project sponsor, the district removed the 151-foot long, 31-foot wide, and 15-foot high stone-filled, timber crib dam and its associated structures, thus restoring a natural river ecosystem with important fishery and recreational values. Because of the dam's removal, fish now can take full advantage of a fish passage the State Marine Resources Department had previously built above the dam at Highland Lake.

Removing the dam demonstrates USACE Environmental Operating Principle number two — *"Recognize the interdependence of life and physical environment,"* number three — *"Seek balance and synergy among human development activities and natural systems...,"* and number five, *"Seek ways and means to assess and mitigate cumulative impacts to the environment."*



Removing the Smelt Hill Dam gave passage to new spawning and foraging waters for migratory fish. (Photo courtesy of New England District)

"Society in the northeast had long ago chosen to harness hydropower and build agriculture impoundment dams for industrial and agriculture development," said William Hubbard, acting deputy district engineer for New England District.

"The successful removal of the Smelt Hill Dam marks the movement to restore these migratory corridors for anadromous fisheries habitat restoration in the Gulf of Maine using the Section 206 program," he said. "It's one of more than 25 ecological restoration projects the Corps is actively conducting through its environmental restoration authorities throughout New England."

Environmental/cultural resources training

In Walla Walla District, Diane Karnish, the Planning Branch's chief of environmental compliance, and other district employees found that a training course on the Umatilla Tribe's perspectives on cultural and natural resources management reflect the seventh principle: *"Respect the views of individuals and groups interested in Corps activities; listen to them actively, and learn from their perspective in the search to find innovative win-win solutions to the nation's problems that also protect and enhance the environment."*

"This training takes the principles from messages on a wall to real-life experience," Karnish said. "This training makes them come alive, makes them real and gives the trainees an understanding of how they will implement the principles in the future."

The Native American Environmental/Cultural Resources Training course was developed jointly by the Corps and the Confederated Tribes of the Umatilla Indian Reservations, and is offered through the Corps Professional Development Support Center. Training participants spend a week living with nature on land belonging to the Confederated Tribes, experiencing how the tribes used to live, and learning how the tribes are connected to the land through their practices and culture.

The sixth principle — *"Build and share an integrated scientific, economic, and social knowledge base that supports a greater understanding of the environment and impacts of our work"* – also comes alive during the training, Karnish said. The information gleaned from the Native Americans about the importance of the environment and how to preserve it for future generations contribute to a knowledge base that can be shared throughout the Corps as part of its learning organization culture.

Ohio River Study

Along the rivers in Ohio, all seven principles are used in the Ohio River Mainstem Systems Study, which is looking at navigational needs, ecosystem restoration, and future river traffic scenarios.

The study began in 1996, long before the Environmental Operating Principles came about. But when the principles are placed next to the study, it's easy to see where the two go hand-in-hand.

"We're looking at the life cycle of our processes as well as environmental life cycles, and are identifying needs for both navigation and ecosystem protection, restoration, and mitigation to ensure long-term sustainability of the resources," said Carl Swor, Nashville District's environmental team leader.

"We're seeking to incorporate environmental design measures into the alternatives that we suggest to first avoid or minimize adverse impacts, while providing for an efficient navigation system into the future," said Swor. "The study makes evi-

Continued on next page

TAC reachback supports war-zone ops

By Julie Shoemaker
Transatlantic Programs Center

The U.S. Army Corps of Engineers has hundreds of team members focused on operations in Afghanistan and Iraq. The Transatlantic Programs Center (TAC) actively supports all aspects of this team effort – military and civilian volunteers, technical and support, subject matter experts, contractors, and local citizens.

With its varied experience and long-term presence in the region, TAC has remained in a position to assist in several areas since Operations Enduring Freedom and Iraqi Freedom began. Reachback support is any service performed, generally stateside, on behalf of the forward deployed group. Services can be technical or administrative.

TAC's support was formalized through separate agreements signed with the Afghanistan Engineer District (AED) and the Gulf Region Division (GRD) in Iraq, based on their specific needs.

IDIQ contracts

Early in the operations, TAC anticipated a need to have contracts in place to meet contingency construction needs anywhere in the U.S. Central Command area of operation. Based on the rapidly changing environment and amount of time required to award individual contracts, TAC awarded multiple indefinite delivery/indefinite quantity (IDIQ) contracts.

IDIQ contracts do not specify a firm quantity of services, other than a minimum and maximum — individual task orders are then issued for specific work. TAC awarded three IDIQ contingency contracts in April 2003 that were good for one year, and in January 2004 awarded 10 more that can be used for multiple years to provide a quick response contracting capability.

These 10 contracts have been used for a wide variety of projects throughout the area of operations with several task orders awarded for work in Iraq and Afghanistan. By mid-January 2005, 41 contract actions totaling $954 million had been awarded, including work such as generator rehabilitation and electrical transmission lines, power plants, aircraft parking ramps, brigade facilities, wastewater treatment facilities, and road and building repairs.

Afghanistan reachback support

When the Afghanistan area office became a district in March 2004, many of the functions TAC provided when the organization was an area office transferred to the new district. The district reports directly to Corps Headquarters, but receives some reachback services from TAC.

"The nature of our environment requires that we be able to respond quickly to emerging needs for engineering and construction assistance," said Doug Sommer, AED Deputy District Engineer for Programs and Project Management.

AED derives a significant amount of depth and agility through resources available from TAC, Sommer said. "Support is provided in all areas of day-to-day activities of the AED through engineering and construction management and technical assistance, contracting capabilities, legal advice, financial management, logistics support, information technology, deployment assistance, and human resources. TAC's experience and expertise working overseas makes them an ideal source for this essential support."

AED's workload is increasing, according to Robert Schaible, chief of the TAC Project Management Division who serves as the point of contact for Afghanistan support.

"The district continues to manage the construction of brigade facilities to support the Afghan National Army," Schaible said. "It oversees projects to support military operations at Bagram and Kandahar, including housing and runways. It supports an emerging counter narcotics program and the U.S. Agency for International Development (USAID). The district provides any other engineering services that might be requested by the Combined Forces Command, Office of Military Cooperation-Afghanistan, USAID, and other government agencies."

AED has a sizeable workload that extends beyond Afghanistan, into Uzbekistan, Pakistan, Tajikistan, and Kyrgyzstan, and TAC provides the same level of reachback services throughout AED's area of operations, according to project manager George Stein.

GRD reachback support

TAC's support to GRD covers practically every functional area, and includes a menu of services, an on-site reachback coordinator in Iraq from TAC, a project management team devoted to supporting operations in Iraq, and a requirement to assist GRD with personnel selection.

In addition to project and contractual support, the team works closely with GRD for requirements that support U.S. and coalition forces, such as utilities systems, building and road repair, and operations and maintenance services at various camps, according to Donn Booker, chief of the TAC Project Management Division devoted to GRD reachback. The team also assists GRD by working with stateside U.S. military customers, and preparing the documentation to initiate projects for supplemental funding.

"One of the important elements to the success of the GRD mission is its reachback capability to the Transatlantic Programs Center," said Steven Stockton, former GRD Director of Business Management and Deputy Commander. "There are needs that just can't be met in theater without the support reachback provides."

TAC has a liaison assigned to GRD whose main responsibility is to coordinate and track all reachback issues. TAC serves as the central clearing house for issues and questions in-theater that require the collective knowledge and experience of the entire Corps. For project-related issues, TAC will resolve and return those to GRD.

Mobile District is responsible for technical reachback for tactical units. For issues related to dams, hydropower, and high-voltage electricity, the Infrastructure Assessment Team, also at Mobile District, receives and processes those requests.

Global War or Terrorism

The Corps-wide efforts supporting the Global War on Terrorism include administrative concerns and solutions, as well. TAC provides administrative services to those deploying to both Iraq and Afghanistan through the Administrative Personnel Processing Office.

Financial management assistance to both AED and GRD is provided based on the memorandum of understanding with each entity and as additional requirements emerge. Issues and problems with pay are resolved by TAC's Customer Service Representatives, an arm of the Resource Management Directorate.

TAC serves as the Continental U.S. Replacement Center, commonly called CRC, for all Corps and contractor employees deploying to Afghanistan. A condensed two- or three-day version of CRC is run for Corps members of the Senior Executive Service and select others deploying to Iraq.

TAC was called on to establish the information technology backbone early, including all aspects from determining the need, developing a plan, procuring, and installing all associated voice and data communications infrastructure equipment. Services provide communications capabilities for all Corps offices in Iraq and Afghanistan.

EOP

Continued from previous page

dent the connection among water resources, protection of environmental health, and the security of our nation."

Swor said that in developing the study, the choice was to "design and act either in conflict with nature or in ways that take inspiration from nature and are modeled after it. The latter alternative is the only real choice."

Reuse at Fort Lewis

Seattle District put three of the principles in action while working with the Public Works Directorate at Fort Lewis, Wash., to remove contaminated soils from a former military range and reuse them for military purposes, rather than developing a non-contaminated open space (principle number three).

The district then worked with the Fort Lewis Public Works Directorate and the Washington Department of Ecology to get regulatory approval to reuse the contaminated soil on an active range on the installation, thus saving on disposal costs – an innovative win-win approach that protects the environment (principle number seven) and mitigates cumulative impacts (principle number three), said Kira Lynch, Seattle District innovative technology advocate.

Finally, the project built an integrated scientific, economic, and social knowledge base with the regulatory community so future soil remediations/disposals can use similar approaches, creating opportunities to reduce future environmental impacts, a reflection of principle number six, said Kym Takasaki, acting section chief of Seattle District's Environmental Engineering & Technology Section.

Umatilla Indians show Walla Walla District employees how a teepee is built. They sleep in the teepees during Native American Training. (Photo by Diane Karnish, Walla Walla District)

The list grows

There are many examples of the EOP being put into action throughout the Corps, and the list is growing every day. Implementing the principles doesn't require a radical change in behavior or a need to seek new authorities. All it requires are employees who continue to carefully consider how to best accomplish our mission today in ways that will protect our natural resources for the future.

HR corner

New Army Combat Uniform tougher, more efficient, easier to clean & use

The new Army Combat Uniform (ACU) was introduced on the Army's 229th birthday, June 14, 2004, during a Pentagon cake-cutting ceremony where Soldiers modeled the wrinkle-free uniform with a digitized camouflage pattern.

The uniform consists of a jacket, trousers, and patrol cap in a new universal camouflage pattern, a moisture-wicking T-shirt, and improved hot weather and temperate weather desert boots. The new ACU is the result of many months of research and development, and is the uniform of choice by the overwhelming majority of Army leaders and soldiers.

It will enhance Soldier performance by providing a uniform that can be tailored to the individual mission, provides enhanced functionality and ergonomics over the existing Battle Dress Uniform (BDU), and does away with the need to buy uniforms for a specific environment.

The ACU is usable anywhere in the world — the Stryker Brigade has tested it since October 2004 in Iraq.

The uniform will be fielded to deploying units starting this month, and fielding to the entire Army will be completed no later than December 2007.

The $88 cost of the new uniform jacket and pants (a $34 increase over the current BDU) will be offset in a number of ways, including:

- A proposed increase in the monthly Clothing Replacement Allowance for enlisted Soldiers.
- A permanent press treatment that eliminates the need for Soldiers to pay for costly dry-cleaning of their uniforms.
- No added cost to Soldiers for additional sewing due to Velcro or pin-on patches, nameplates, and badges.
- Army-wide savings realized by streamlining procurement and stockpiling one uniform for all environments instead of maintaining separate woodland, desert, and temperate uniform sets.
- Manufacturing costs will decrease in time as the manufacturing processes are refined.

The Army black beret will remain authorized for wear with the new ACU.

The ACU, including component materials, will be manufactured in the U.S. using the same industrial base that produces the current BDU, ensuring the highest quality control and assisting the American work force.

Following are some common questions about the ACU.

Why did the Army select a new uniform?

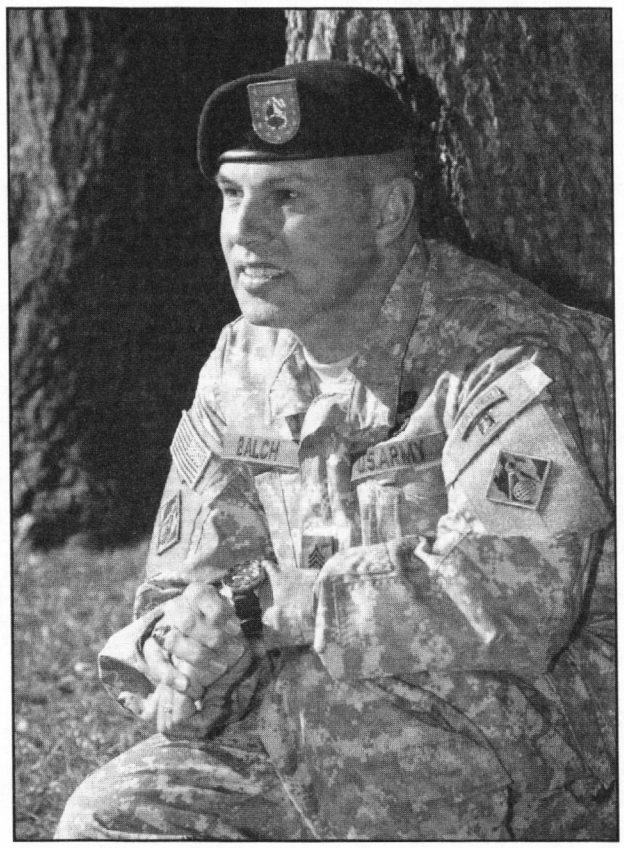
The ACU was designed by Soldiers to meet the current operational environment. Because of its universal camouflage pattern and enhanced versatility, comfort, and ergonomic qualities, the ACU will increase our Soldiers' ability to train and fight in the ever-changing environments wherever future wars will be fought.

For instance, the current BDU was designed 25 years ago, before the Army routinely wore ballistic body armor. The Small Arms Protective Inserts (SAPI) that go into the Outer Tactical Vest require the Interceptor Body Armor to be worn closed. The ACU compliments the Interceptor Body Armor by improving access to pockets and eliminating comfort issues, such as the SAPI pressing the current BDU shirt buttons into the chest of the Soldier.

What is the lifetime of the uniform?

The ACU is made with the same nylon/cotton ripstop fabric as the current Enhanced Hot Weather BDU, which has an estimated wear life of six months.

Why will the uniform not require starching?



Command Sgt. Maj. Michael Balch, former USACE Command Sergeant Major, models the new Army Combat Uniform. (Photo by F.T. Eyre)

A wrinkle-free treatment has been applied. Starching uniforms makes the uniform material more brittle and subsequently reduces the wear life. The wrinkle-free treatment will allow Soldiers to wear the ACU without incurring costs of commercial laundering or pressing.

What is the wear-out date for the current Battle Dress Uniform?

The Army introduced the ACU this month. Wear-out date for BDU is to be determined. Production ramp-up of the ACU will cause production of the BDU to end in early fiscal year 2006. Stocks of BDUs will be sold or issued until exhausted. The wear-out date will be established based on when stocks are exhausted, and will provide adequate time for Soldiers to procure the ACU.

Why was the digitized print chosen over the more traditional camouflage?

There are a number of technologies to provide effective camouflage. The ACU uses a digitized print developed by the Marines. The Army modified the USMC pattern and used alternate colors to provide an effective camouflage in multiple environments.

Who will get the uniform?

All Soldiers, regardless of unit or function, will receive the ACU. It will be fielded to the total Army (active, Reserve, and National Guard) beginning this month.

Who will pay for it?

New enlisted Soldiers will receive an initial issue of four ACUs at Army expense. Current Army enlisted Soldiers receive a Clothing Replacement Allowance. Current enlisted Reservists and National Guardsmen will be issued the ACU as required at Army expense. Officers will buy the ACU at their own expense from the Army Military Clothing Sales Stores. Deploying enlisted Soldiers and officers will be issued ACUs at the Army's expense.

Why is there an increase in the cost of the ACU?

The ACU costs $88, a $34 increase over the BDU. The increase results from an $8 wrinkle-free treatment, and the remainder is based on greater manufacturing complexity. The uniform is more complicated to make because of its enhanced functionality. However, the good news is that this cost will decrease over time.

IM/IT draft performance work statement released

The Information Management/Information Technology (IM/IT) A-76 Performance Work Statement's (PWS) second draft was released for public comment on Feb. 28. The package, which contains more than 12,000 pages of data, consists of six chapters describing the IM/IT scope of work for the entire U.S. Army Corps of Engineers. There are 18 technical exhibits that depict performance standards, workload data, infrastructure data, and equipment documentation.

Glen De Pue, Team Leader for the PWS Team, said, "This document could not have been completed without the help and support of the entire IT community. The PWS team, the reach back team, and all those Corps employees who helped us gather all the work load data and made comments on the first draft are directly responsible for this document and all the hard work it took to get us to this point."

The first draft of the PWS, released last November, generated more than 500 comments from the public, USACE employees, and prospective bidders. Many of the 500 comments contained more than 20 pages of recommendations, questions, suggestions, and general observations. The PWS team is currently answering questions on both the November release and the recent February release. Answers to the questions will be posted on the Web site as soon as they are available.

During preparation of the PWS, the team conducted more than 1,000 hours of mission and workload interviews with representatives from every USACE site. During these interviews, products and service items were defined for IM/IT work at more than 700 locations around the world where about 38,000 employees and contractors carry out their daily responsibilities.

The interviews and data collection determined that USACE employees use 385,000 individual IT components in compliance with 800-plus formal agreements with partners and customers.

Ray Navidi, USACE Strategic Sourcing Program Office, said "The PWS team members' efforts will always be remembered as a cornerstone of the USACE competitive sourcing program, and will be instrumental in ensuring the Corps will be provided with the best IM/IT services in the future."

Around the Corps

Building future engineers

What do uncooked spaghetti, raw eggs, skateboard wheels, and a Porsche racecar have in common? They all helped show high school students how engineers turn ideas into reality.

Jim Bailie, General Manager of Brumos Racing, showed students the importance of engineering in racecar safety.

More than 100 students were introduced to engineering at Jacksonville District's third annual Engineering Career Day. Sixteen public and private schools selected students with an interest in engineering to gain exposure through problem-solving competitions, talking to engineers from 17 public and private organizations, and meeting with admissions staff from five Florida colleges.

In advance, the 21 student teams received a take-home project to build a model car that could carry a cargo of raw eggs down a six-foot-high ramp and survive a crash into a concrete block.

After lunch, the students' imaginations were further tested with the pasta tower problem. The teams were tasked to build a tower made of uncooked spaghetti and marshmallows that could support a roll of nickels, which weighs about 200 grams (seven ounces). The towers were judged on height, strength, and cost effectiveness, since each spaghetti strand "cost" $95,000 and each large marshmallow $11,000.

One highlight of the event was when students viewed a Porsche 911 Turbo racecar and asked questions of Brumos Racing's General Manager, Jim Bailie. Bailie shared how these state-of-the-art racecars are engineered for performance and safety. Bailie stressed the importance of a good education. "What we do in the racecar business is basically re-engineer what someone else created," said Bailie. "Anyone interested in motor sports must have a background in engineering."

Community relations award

Norfolk District recently won second place in the Army Community Relations Awards of Excellence, Special Events Category, for their Embrey Dam Breaching event. Presented at the Army Worldwide Public Affairs Symposium on March 10 to Diana Bailey and Nancy Allen of Norfolk District, and project partner Doug Fawcett, Director of Public Works for Fredericksburg, Va., the award recognizes the best of the Army's worldwide community relations work during the 2004 fiscal year.

On Feb. 23, 2004 Embrey Dam on the Rappahannock River at Fredericksburg was breached by more than 600 pounds of explosives. The river flowed freely again for the first time in more than 151 years.

The removal of Embrey, the largest dam dismantled in the nation since 1999, restored 106 river miles of unimpeded fish passage.

Public affairs and communications specialists from several partner organizations, including the U.S. Army Dive Team, the U.S. Air Force Reserves, the U.S. Fish & Wildlife Service, and the Chesapeake Bay Program, came together with the Corps, Fredericksburg, and the Virginia Department of Game and Inland Fisheries to plan a comprehensive communications and community relations strategy for the breaching. About 3,000 citizens attended the event, plus more than 140 representatives from 58 news media organizations documented the day.

Gunners Inn

In the Gunners Inn project at Fort Sill, Okla., Tulsa District renovated a drab, inefficient bar and kitchen facility into premier catering accommodations. The goal was to create a facility that could accommodate both casual luncheons and black-tie events for up to 750 patrons at a time.

Fort Sill needed a suitable catering facility. Many military patrons were referred off-post for large-scale events because the installation could not accommodate them. Two additional projects were discovered during the renovation – a roof replacement and sanitary sewer upgrade.

The cost was $1.4 million in Non-Appropriated Funds and $200,000 in Appropriated Funds. On the evening that the renovation was completed, Gunners Inn served more than 550 patrons in a full-service, catered meal. More than 30,000 patrons have been served since.

Coastal Stewardship Award

Sue Hawes of New Orleans District is one of four people honored by the Coalition to Restore Coastal Louisiana. The awards recognized outstanding stewards of Louisiana's coast, and were given at the annual Coastal Stewardship Awards Banquet on March 12 in Lafayette, La.

Hawes received the Distinguished Achievement award for her service as a project manager for the environment with the district. She currently serves as a coalition board member and also serves as the Corps' representative for the Barataria Terrebonne National Estuary Program.

Competitive sourcing update

Department of Public Works (DPW) — On Mar. 31, the Corps released its first competitive sourcing request for proposals under the President's Management Agenda. The solicitation is for Directorate of Public Works functions at the Engineer Research & Development Center in Vicksburg, Miss., and the Cold Regions Research Engineering Laboratory in Hanover, N.H.

Contractor proposals, including the Government Tender (Most Efficient Organization) are due by June 30.

The DPW competition includes a total of 44 positions, and involves facilities maintenance trades such as carpentry, electrical, plumbing, construction, refrigeration, and buildings and grounds.

Finance Center — Public announcement took place on March 2. The competition involves data entry and related work performed by 68 on-board positions in Millington, Tenn.

Information Management/Information Technology — The second draft of the Performance Work Statement was published for public review and comment on Feb. 28, the deadline for comments was March 18.

Competitive Sourcing Web site — For details on the Corps' Competitive Sourcing Initiative, visit the Competitive Sourcing website at http://competitivesourcing.usace.army.mil/index.htm. Use the link to the Baltimore District contracting Web site for a copy of the documents.

MRC celebrates 125 years

On April 20, the Corps' Mississippi River Commission (MRC) will host two open houses to celebrate its 125th anniversary. The open houses will be held at the MRC Building and onboard the *MV Mississippi*. Visitors will be given introductory briefings followed by tours that highlight the commission's work in the Mississippi valley.

The MRC, established in 1879, has seven members, each nominated by the president and confirmed by the Senate. Three of the MRC's members are officers of the Corps; one is from the National Oceanic and Atmospheric Administration; and three are civilians, two of whom are civil engineers.

The MRC's general duties include recommendation of policy and work programs, the study of and reporting upon the necessity for modifications or additions to flood control and navigation projects, recommendation upon any matters authorized by law, and making semi-annual inspection trips. The MRC is responsible for the entire length of the Mississippi River from its headwaters at Lake Itasca, Minn., to Head of Passes, La., where the river empties into the Gulf of Mexico.

West Point agreement

The U.S. Military Academy at West point and the Engineer Research & Development Center (ERDC) signed a memorandum of agreement to promote joint research and information exchange.

ERDC labs have informally hosted West Point faculty and cadets for short-term research visits. This agreement will formalize and expand future cooperative efforts.

PRC Water Minister visits

On March 1, Wang Shucheng, Minister of Water Resources for the People's Republic of China, visited USACE Headquarters in Washington, D.C. He met with Maj. Gen. Don Riley, Director of Civil Works, and other Corps leaders. Discussions touched on wetland rehabilitation, water quality, and protecting ecosystems. Wang was interested in exchanges of personnel and technical information, and expressed a keen interest in developing a memorandum of understanding between the Corps and the PRC Ministry of Water Resources. (Photo by F.T. Eyre)

OK City bombing

Continued from page one

nied search teams, advising them which areas were safe to tunnel and where strengthening was needed.

Ted Beasley, structures specialist, deployed from Memphis District. "I monitored building movement for the safety of the workers below," he said. "With the main columns sheared at the base, the building was constantly moving, and concrete was falling from the upper floors. When there was any excess movement of the slabs above, work was halted until it subsided."

Tom Niedernhofer, now the Corps Urban Search & Rescue program manager, was the lead structures specialist for the first eight nights. He came to Oklahoma City with extensive disaster response experience and had worked as an instructor at the Corps' Structural Collapse School.

The book *Oklahoma City Rescue Operations,* prepared by the National Fire Protection Association, refers to Niedernhofer as a key person at the incident and says that teams of engineers "worked around the clock to develop strategies for the rescue workers."

The book also includes a timeline, and excerpts paint a stark picture of the day's horror. The first and 77th entries read:

9:02 a.m. — "Officers calling in a blast in downtown OKC."

9:48 a.m. — "Morgue established at SE corner of Federal Building children's playground."

Life-altering

Mark McVay of Tulsa District's Engineering and Construction Division said, "I'll never forget children's toys laying in the debris and in the playground just behind the building, the blood streaks on the remaining stairwells where survivors supported themselves as they exited, glass shards sticking straight into the back walls, the stench of remains, stacks of collapsed floors on top of each other, and buildings up to several blocks away with broken windows. It was a landmark in our nation's and my personal history."

Tim Willard, who is now the resident engineer with the Utah Resident Office at Hill Air Force Base, says he didn't sleep for three days. He called it a life-altering experience that was "rewarding, stressful, educational, and humbling."

It also changed Norman Skjelbreia's life. "The experience is very memorable and was a major factor in my career," said Skjelbreia, who works in E&C Division in Seattle District. He recalled both the horror and times of pride.

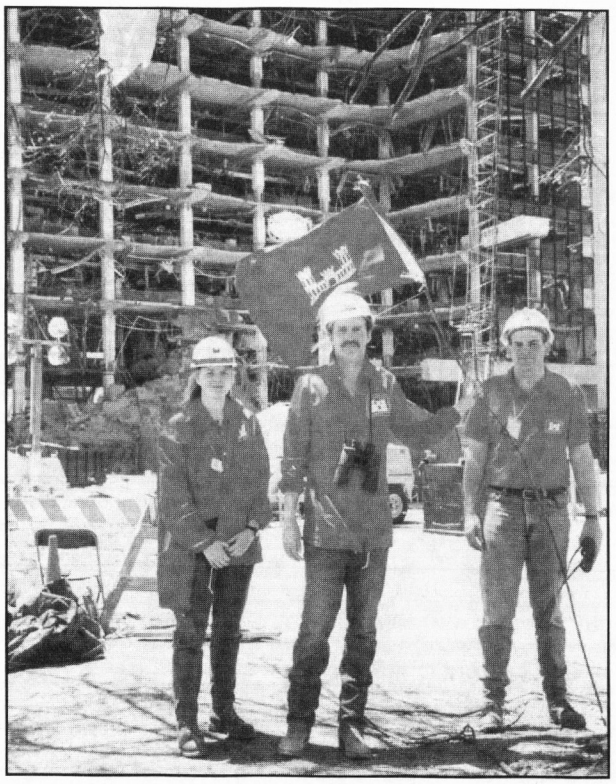
"Number one, the smell. The smell of death was so bad in my hotel room from dirty clothes in a duffle bag in the closet, I had to put them in the trunk of the car.

"But also, I couldn't have been prouder to be part of the federal response," Skjelbreia added. "This was the federal government's first urban search and rescue (US&R) response involving many federal agencies. They all worked toward a common goal; the individual people took care of each other like brothers and sisters. The thousands of responders were united as one."

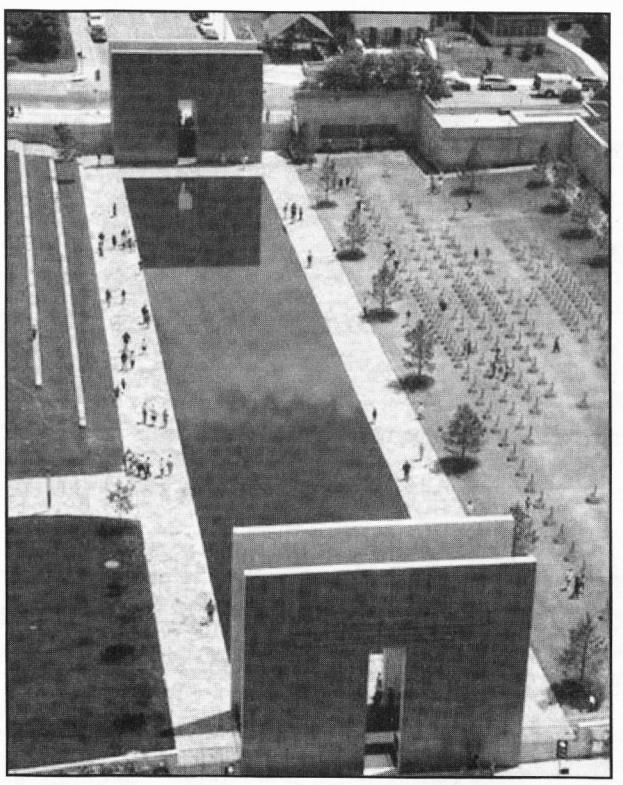
Gratifying

Kelley Aasen, now chief of Emergency Management Branch in South Pacific Division, deployed from San Francisco District on April 20. A total of 20 trained US&R personnel responded to the disaster.

"I have many fond and tragic memories from my deployment to Oklahoma City, but there are two that still stand out from the rest," Aasen said.



From left, Tulsa District's Lori Thomas, Mark McVay, and John Vanleeuwen with the Corps flag in front of the wreck of the Murrah Building a decade ago in Oklahoma City. (Photo courtesy of Tulsa District)



An aerial view of the Oklahoma City National Memorial and Museum that now stands on the site of the Murrah Building. The memorial includes a Field of Empty Chairs, the Gates of Time, and the Reflecting Pool. (Photo courtesy of Tulsa District)

"First, on the positive side were the truly great people of Oklahoma City and the support they gave us. They continually thanked us for being there. On a more tragic note was the simple fact that this disaster was absolutely unnecessary resulting from a criminal act of terrorism and one in which children were victims. I will never forget the sense of complete loss I felt every time I saw one of the victims removed from the building, and you could always tell when it was a child."

Aasen was the supervisor for the Corps' US&R structural engineers until he was replaced after about a week by Mike Dillabough, currently chief of Operations and Readiness Division, San Francisco District.

Dillabough said, "In a nutshell, the work was both rewarding and grimy — grimy because the smell of death was everywhere. I witnessed more than 100 bodies retrieved from the rubble. Rewarding because our job was to make the pile of rubble and partially destroyed building as safe as possible for the rescue workers so they did not die in the attempt."

Cal Edson of Savannah District is the resident engineer at the Barracks Resident Office at Fort Bragg, N.C. He deployed to Oklahoma City as a structures specialist and worked the night shift of the second week.

Memories

He said, "Although, obviously, it was the most tragic and sad event I was ever associated with, it undoubtedly was the most gratifying work I've done with the Corps. I was truly amazed at the spirit of the Oklahoma City people. The ability for people from all over the country to come together to work for a common goal was extraordinary.

"I can truthfully say for the first year afterwards, I thought about the experience every day," Edson said. "Each year after, a little less. Now as the years go by, I find myself thinking of the positive aspects of the experience whenever I feel I have a so-called tough situation to deal with, and somehow it doesn't seem so tough anymore."

On his second night there, a volunteer gave Edson an Oklahoma City pin. He wears it to church each year on the bombing anniversary.

Spencer Dulaney deployed with Kansas City District's System To Locate Survivors unit. One of his most vivid images is of people working the debris pile for hours searching for bodies. Another is his memory of the community.

Support from OK City

"The people and businesses of Oklahoma City are to be commended for the care and concern they displayed throughout the ordeal," said Dulaney. "A tough assignment for many was less stressful as a result."

In 1995, Tulsa District's Melonie Zincke worked at the Corps' Central Oklahoma Area Office on Tinker Air Force Base in Midwest City, Okla. She heard the blast that morning and later worked several shifts at the Command Center.

"Emergency responders consistently talked about how different it was to be at this site because it was so unusual for them to be provided a place to sleep, food, medicine, work boots, batteries, or anything they could possibly need," said Zincke. "When I saw the rooms of food, equipment, and everything that was donated to this effort, I was, and still am, so proud to be from Oklahoma."

Memorial

The Corps can be proud, too. From the beginning until the remains of the structure were turned over to General Services Administration for demolition, Corps specialists lent their expertise. On May 23, 1995, the remains of the Murrah Building were imploded, and the debris removed.

The site is now home to the Oklahoma City National Memorial and Museum. The complex preserves the place and events that changed the world and honors the victims, survivors, rescuers, and all who were affected that day.

Inside, visitors to the museum journey through the terror and aftermath of April 19, 1995. Fittingly, its first exhibit is entitled "Chaos," and the final is "Hope."

Outside, the memorial includes children's handpainted tiles, a reflection pool, the Survivor Tree, and a haunting Field of Empty Chairs.

Massive Gates of Time border two sides of the memorial. One proclaims 9:02, the other 9:03.

(This article includes excerpts from several articles written in 1995 by the late Barbara Cravens of Tulsa District; Anne Cannon, formerly of Southwestern Division; and Bernard Tate of Headquarters.)